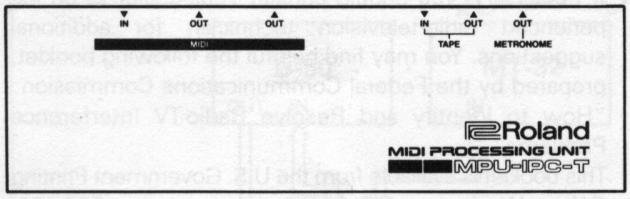
MIDI PROCESSING UNIT

MPU-IPC-T

The Roland MPU-IPC-T features the functions of the MIDI Processing Unit MPU-401 plus the interface with an IBM's home computer. No need to say, the software such as commands and data format are exactly the same as the MPU-401. Please read the MPU-401's Technical Reference Manual:



Warning

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only Computer certified to comply with the Class B limits may be attached to this equipment. Operation with non-certified computing device is likely to result in interference to radio and TV reception.

Radio and Television Interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if you use a "rabbit ear" television antenna. (A "rabbit ear" antenna is the telescoping-rod type usually contained on TV receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem:

- Disconnect the peripheral devices and their input/output cables one at a time. If the interference stops, it is caused by either the peripheral device or its I/O cable. These devices usually require shield I/O cables. For Roland peripheral devices, you can obtain the proper shielded cable from your dealer.

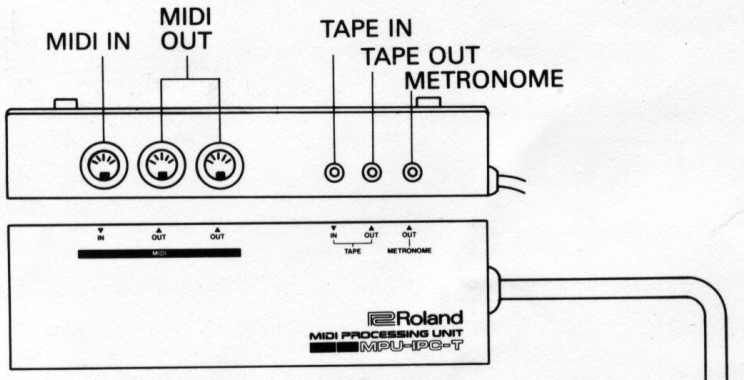
If your computer or its peripheral devices does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the TV or radio antenna until the interference stops.
- Move the computer or its peripheral device to one side or the other of the TV or radio.
- Move the computer or its peripheral devices farther away from the TV or radio.
- Plug the computer or its peripheral devices into an outlet that is on a different circuit than the TV or radio. (That is, make certain the computer or its peripheral devices and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV.

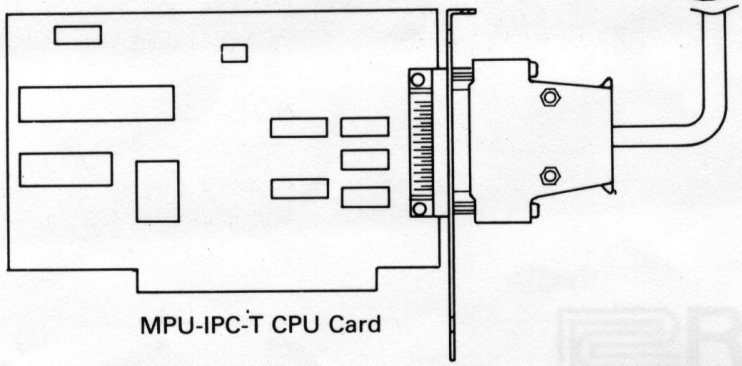
If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission: "How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the U.S. Government Printing Office, Wasington, DC 20402, stock number 004-000-00345-4.

Panel Description



MPU-IPC-T Connector Box



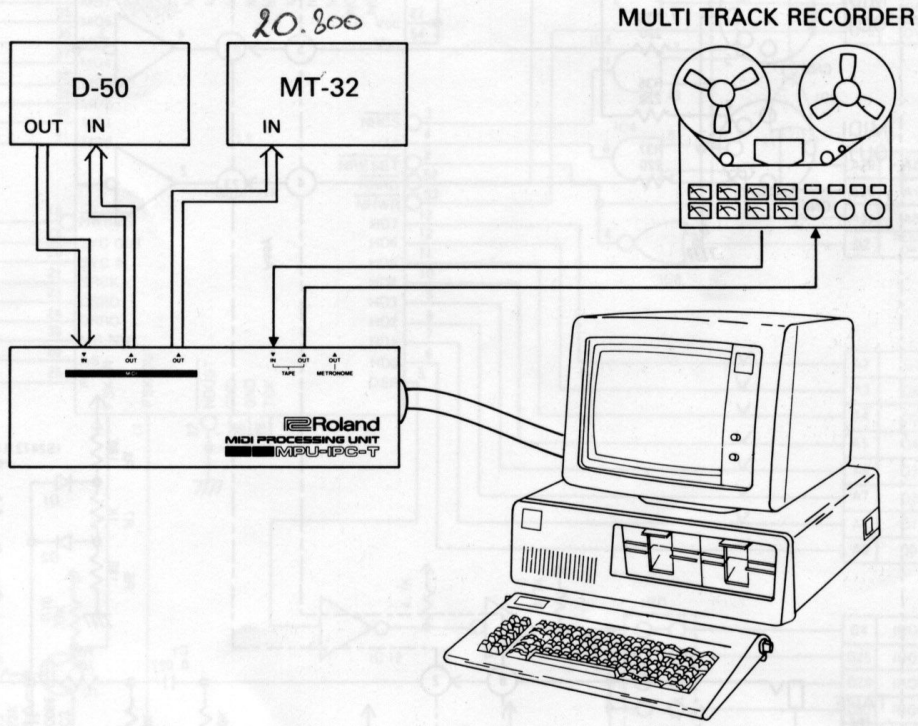
MPU-IPC-T CPU Card

■ MIDI and MPU-IPC-T

There are various ways of producing music by using computers. For example, a computer may play music data with its own sound source, and a robot may play the keyboard instead of a man. The most common method of creating computer music, however, is playing the electronic musical instruments featuring MIDI by a host computer. MIDI (Musical Instruments Digital Interface) is an international standard for digitally communicating musical information (e.g. pressing keys, using bender, etc.).

MIDI Processing Unit MPU-IPC-T is an interface for a computer and MIDI instruments (sound source). The signals used by computers and MIDI devices are both digital but totally different languages like English and Japanese. The MPU-IPC-T is a micro computer that works as an interpreter of a computer and MIDI sound modules, allowing the host computer to concentrate specifically on the music.

MPU System Setup Example



Apart from the function as an interpreter, the MPU-IPC-T features the following functions.

a. MIDI Clock Output

The MPU-IPC-T sends out MIDI clock for synchronization with a rhythm machine through the MIDI OUT Connector.

b. Tape Sync Function

For multitrack recording, the TAPE IN and OUT Connectors can be used to synchronize the first recorded sound with the later recorded one.

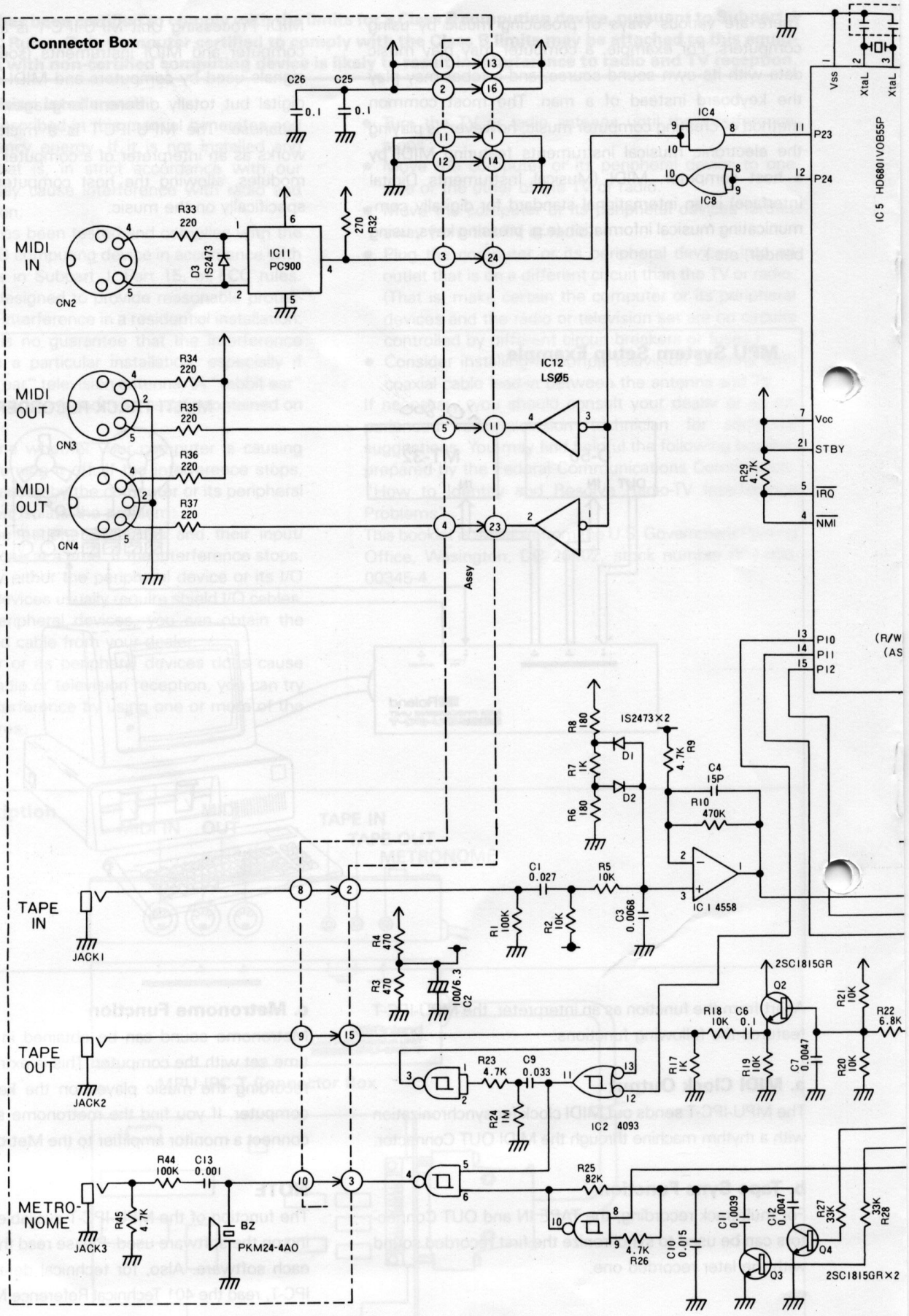
c. Metronome Function

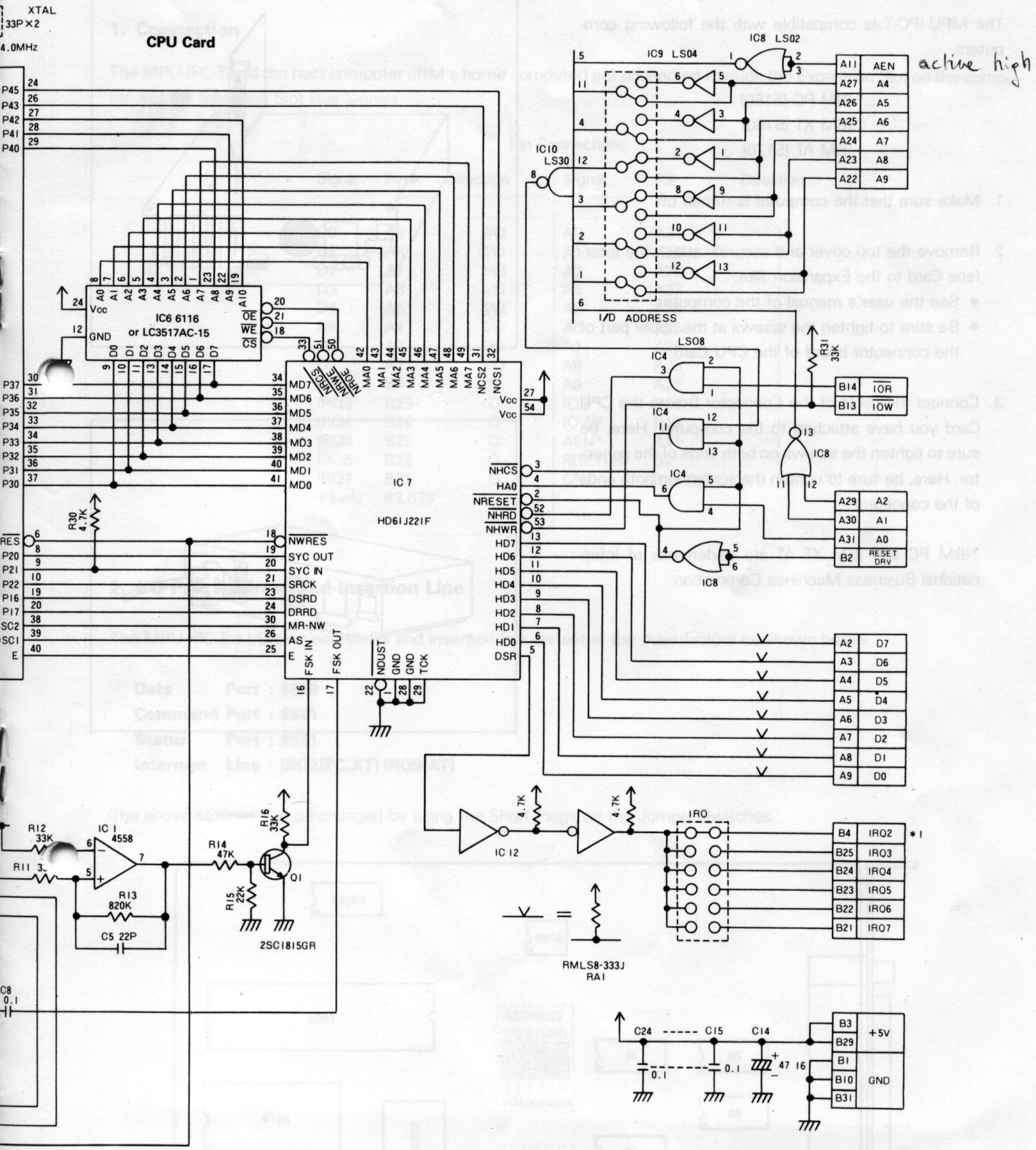
Metronome sound can be obtained in the tempo and time set with the computer. This is extremely useful for recording the music played on the keyboard into the computer. If you find the metronome sound too small, connect a monitor amplifier to the Metronome Out Jack.

NOTE

The function of the MPU-IPC-T available differs depending on the software used. Please read the instructions of each software. Also, for technical details of the MPU-IPC-T, read the 401 Technical Reference Manual (optional).

■ CIRCUIT DIAGRAM




CPU Card
XTAL
33P×2
4.0MHz
IC6 6116
or LC3517AC-15
IC 7
HD61J221F
IC8 LS02
IC9 LS04
IC10
LS30
I/O ADDRESS
active high
A11 AEN
A27 A4
A26 A5
A25 A6
A24 A7
A23 A8
A22 A9
LS08
IC4
IC8
R31
33K
B14 IOR
B13 IOW
A29 A2
A30 A1
A31 A0
B2 RESET DRV
R30
4.7K
NWRES
SYC OUT
SYC IN
SRCK
DSRD
DRRD
MR-NW
AS
E
FSK IN
FSK OUT
NDUST
GND
GND
TCK
NHCS
HA0
NRESET
NHRD
NHWR
HD7
HD6
HD5
HD4
HD3
HD2
HD1
HD0
DSR
A2 D7
A3 D6
A4 D5
A5 D4
A6 D3
A7 D2
A8 D1
A9 D0
IC 12
4.7K
IRQ
B4 IRQ2 *1
B25 IRQ3
B24 IRQ4
B23 IRQ5
B22 IRQ6
B21 IRQ7
R12
33K
IC 1
4558
R13
820K
C5 22P
R14
47K
R15
22K
R16
33K
Q1
2SC1815GR
RMLS8-333J
RA1
C24
C15
C14
0.1
47 16
B3 +5V
B29
B1
B10 GND
B31
C8
0.1
*1 IRQ9 (AT)

■ Setup

The MPU-IPC-T is compatible with the following computers.

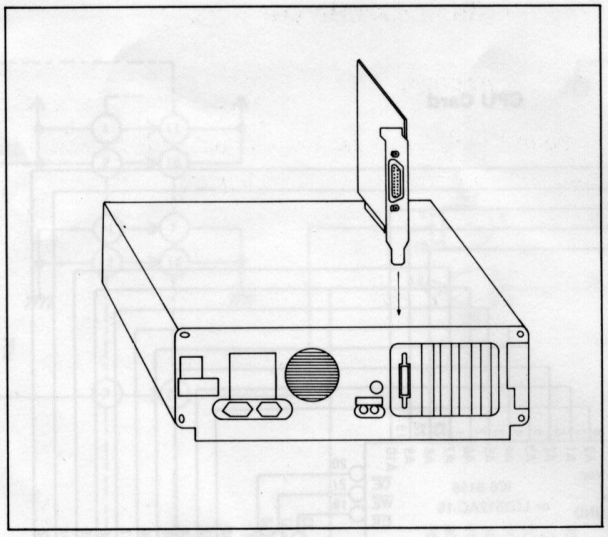
IBM PC (5150)
IBM XT (5160)
IBM AT (5170)

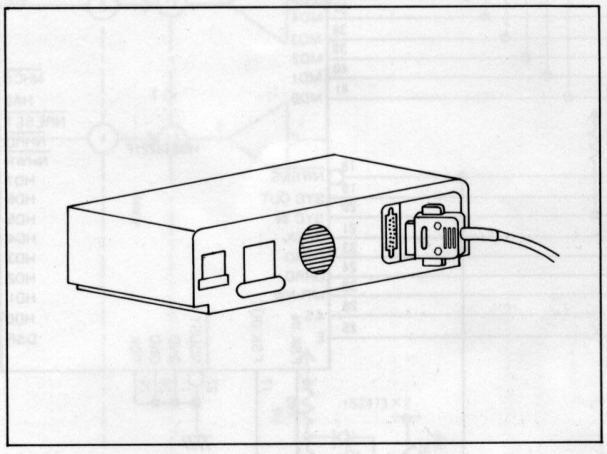
1. Make sure that the computer is turned off.

2. Remove the top cover and securely attach the Interface Card to the Expansion Slot.
   - See the user's manual of the computer.
   - Be sure to tighten the screws at the upper part of the connector board of the CPU Card.

3. Connect the cable of the Connector Box to the CPU Card you have attached to the computer. Here, be sure to tighten the screws on both ends of the conector. Here, be sure to tighten the screws on both ends of the connector.

   *IBM PC and IBM XT AT are trademarks of International Business Machines Corporation.





■ MPU-IPC-T's hardware

1. Connection

The MPU-IPC-T and the host computer (IBM's home computer) are connected through the Expansion Slot on the computer and the following Slot Bus Signals.

Pin Connections

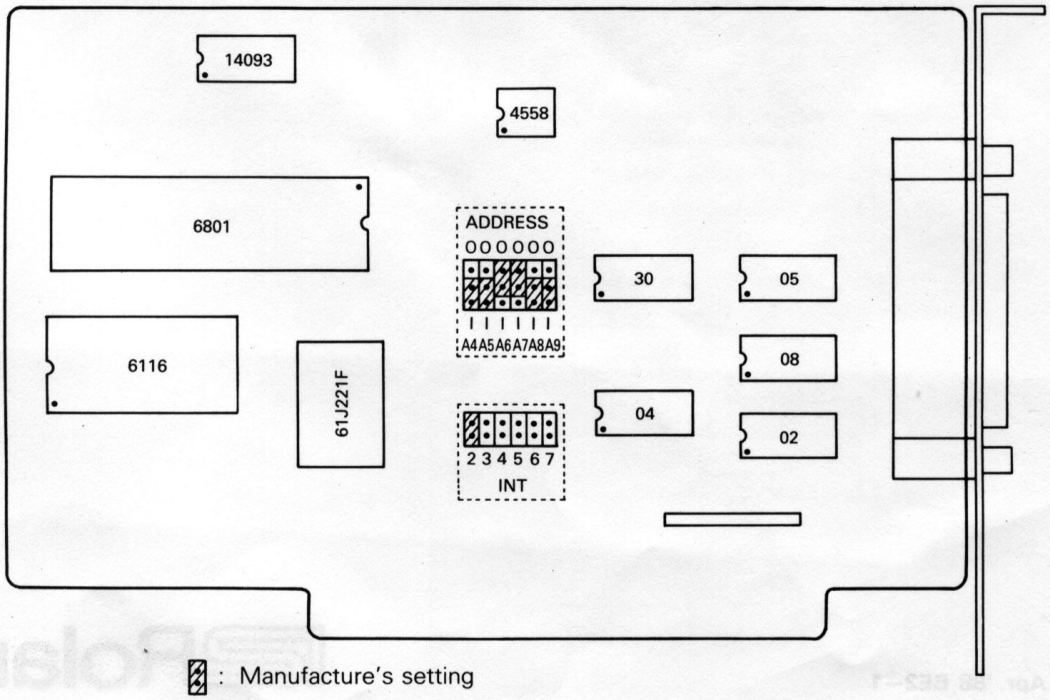
Signal	Pin#	Direction	Signal	P#	Direction
D0	A9	I/O	A0	A31	I
D1	A8	I/O	A1	A30	I
D2	A7	I/O	A2	A29	I
D3	A6	I/O	A4	A27	I
D4	A5	I/O	A5	A26	I
D5	A4	I/O	A6	A25	I
D6	A3	I/O	A7	A24	I
D7	A2	I/O	A8	A23	I
IRQ2	B4	O	A9	A22	I
IRQ3	B25	O	IOR*	B14	I
IRQ4	B24	O	IOW*	B13	I
IRQ5	B23	O	AEN*	A11	I
IRQ6	B22	O	RESET DRV	B2	I
IRQ7	B21	O	GND	B1,B10,B31	I
+5vdc	B3,B29	I			

2. I/O Port Address and Insertion Line

The MPU-IPC-T's I/O port addresses and insertion line are set at the manufacture as shown below.

Data Port : $330
Command Port : $331
Status Port : $331
Interrupt Line : IRQ2(PC,XT) IRQ9(AT)

The above settings can be changed by using the Short Plugs on the Jumper Switches.



▨ : Manufacture's setting

■ Specifications

INPUT TERMINAL:

MIDI IN	1
MIDI OUT	2
TAPE OUT	1
METRONOME OUT	1
COMPUTER BUS CONNECTOR	1

Dimensions: Connector Box: 165(W) × 50(D) × 31(H)mm
6½" × 1 15/16" × 1¼"
CPU Card: 166(W) × 120(D) × 22(H)mm
6 9/16" × 4¾" × ⅞"

Weight: Connector Box: 410g/14oz (including the cable)
CPUT Card: 100g/4oz

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Roland